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Spanish adaptation of Yamagishi General Trust Scale

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Título: Adaptación al castellano de la Escala de Confianza General de Yamagishi.

Resumen: La confianza es, por su importancia en las relaciones sociales, un fenómeno de gran interés tanto a nivel teórico como aplicado. En este artículo presentamos la adaptación al castellano de uno de los instrumentos más utilizados en el investigación sobre confianza: la Escala de Confianza General de Yamagishi & Yamagishi (1994). Un total de 626 participantes respondieron al cuestionario. Los resultados indican que las propiedades psicométricas de la versión en castellano son satisfactorias tanto a nivel de escala (α =.862) como a nivel de ítems ($a \geq 1.58$). No se observó funcionamiento diferencial de los ítems respecto al sexo, sí respecto a la edad. En cuanto a la relación entre la medida de Confianza y otras variables disposicionales y conductuales, se obtuvieron correlaciones significativas con Cordialidad ($r = .376$), y en mujeres también con Apertura a la Experiencia ($r = .135$).

Palabras clave: Personalidad; confianza; Yamagishi; Cinco Grandes; búsqueda de sensaciones.

Abstract: The significance that trust has in social exchange relationships has led to a growing amount of literature dealing with this phenomenon at a theoretical and an applied level. With the aim of conducting trust research by means of an instrument with established reliability and validity, the General Trust Scale (Yamagishi & Yamagishi, 1994) was translated into Spanish. The sample comprised 626 participants. Results indicate that the Spanish adaptation has satisfactory psychometric properties: test's reliability (α = .862) and items' discrimination ($a \geq 1.58$). There was no differential item functioning regarding the participants' gender, but differences aroused as regards to their age. The relationship with several dispositional and behavioral variables was assessed, being significant its correlation with Agreeableness ($r = .376$) and, for the women, also with Openness to Experience ($r = .135$).

Key words: Personality; trust; Yamagishi; Big Five; sensation seeking.

Introduction

Trust is an important phenomenon present in social exchange relationships, whether they occur between people, organizations or other social entities (Mayer, Davis, & Schoorman, 1995). Its prominence in interpersonal interactions has led to a growing amount of literature within organizational and social psychology focusing on its relationship with multiple variables (Evans & Revelle, 2008; Rotter, 1971). Within these fields of psychology there are several domains where trust has been utilized, especially in order to attain a thorough understanding of social interactions that occur in organizational settings (e.g. Dirks & Ferrin, 2002; Korsgaard, Brodt, & Whitener, 2002; Kramer, 1999; Levin, Whitener, & Cross, 2006). Particular attention has been paid to the behaviors that emerge in work teams (e.g. Costa, 2003; Dirks, 1999; Driskell, Goodwin, Salas, & O'Shea, 2006; Kiffin-Petersen, 2004; Webber, 2002), and that take place within the Information and Communication Technology realm (ICT) (e.g. Castelfranchi & Tan, 2001; Chen & Lee, 2008; Cheshire, Antin, Cook, & Churchill, 2010; Gefen, 2000; Jarvenpaa & Leidner, 1999; Salo & Karjaluoto, 2007; Yoon, 2002). As one of the primary aims of applied psychology is searching for dispositional variables that enable us to comprehend how people will behave, trust has been used as a predictor of specific behaviors that occur in the former domains. Some of these demeanors are of notable importance because they have an impact on economic growth as, for example, happens with internet shopping (e.g. Chen & Barnes, 2007; Jarvenpaa, Tractinsky, & Vitale, 2000; Martínez-López, Luna, & Martínez, 2005; McKnight, Choudhury, & Kacmar, 2002). Moreover, trust has shown to be an important predictor of the quality of the work teams' environment and job, through its influence on task performance (e.g. Colquitt, Scott, & LePine, 2007; Costa, Roe, & Taillieu, 2001; Dirks & Ferrin, 2001) and knowledge or information sharing (e.g. Abrams, Cross, Lesser, & Levin, 2003; Mayer et al., 1995; McEvily, Perrone, & Zaheer, 2003; Mooradian, Renzl, & Matzler, 2006).

Research on trust has not only focused on trust's impact on interpersonal interaction. Disentangle trust's relationship with other personality variables is also necessary to establish its theoretical background and achieve a comprehensive understanding of this phenomenon. However, attaining a theoretical model of trust has been difficult due to its definition, the instruments and the variables chosen being diverse and domain dependant (McKnight et al., 2002; Rousseau, Sitkin, Burt, & Camerer, 1998). One of the most accepted and used models of trust is the one proposed by Mayer et al. (1995) in which they pointed out a difference between propensity to trust, trust -the willingness to become vulnerable- and trust related behaviors -to which they refer as risk taking behaviors-. Despite the variety of trust's definitions that we aforementioned, when authors focus on propensity to trust most of them agree on its description: it is the general expectation that others will behave benevolently and with goodwill (Rotter, 1967; Yamagishi & Yamagishi, 1994).

Among the most general and utilized instruments that have been developed to measure propensity to trust, three are especially prominent: Rotter Interpersonal Trust Scale (Rotter, 1967), the National Opinion Research General Social Survey (GSS) and Yamagishi General Trust Scale (GTS; Yamagishi & Yamagishi, 1994). Rotter Interpersonal Trust Scale was one of the firsts developed to measure this construct. It comprises 25 items that deal with trust in general

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others as well as in concrete social objects (such as parents, teachers or public officials) and its split half reliability ranges from .75 to .77 (Rotter, 1967). The GSS is the prime source of trust and social capital data for the U.S. (Glaeser, Laibson, Scheinkman, & Soutter, 2000). It is based on attributions about others' behavior and it comprises one trust item: "Generally speaking, would you say that most people can be trusted or that you can´t be too careful in dealing with people?" (Ahmed & Salas, 2009)

Yamagishi General Trust Scale (GTS) comprises six items (five items in the latest version, T. Yamagishi, personal communication, December 9, 2009) involving "honesty and trustworthiness of people in general" (Yamagishi & Yamagishi, 1994, p. 146). It is a short questionnaire that takes one minute to answer, with its internal reliability ranging from .70 to .78 (Yamagishi & Yamagishi, 1994) and with several studies supporting its predictive validity (Yamagishi, Kikuchi, & Kosugi, 1999). It was developed by selecting items from the most important and used trust questionnaires (Ahmed & Salas, 2009; Evans & Revelle, 2008) and with the aim of measuring cross-cultural differences in dispositional trust. In fact, numerous authors have used this questionnaire when exploring trust from a cross-cultural scope (e.g. Ahmed & Salas, 2009; Igarashi et al., 2008; Ishii, 2007; Yamagishi & Yamagishi, 1994). Nevertheless, the GTS has been utilized in other domains of trust research, such as within the social dilemma literature (e.g. Gollwitzer, Rothmund, Pfeiffer, & Ensenbach, 2009; Ishii & Kurzban, 2008; Lokhorst, van Dijk, & Staats, 2009; Stouten, De Cremer, & Van Dijk, 2006; Yamagishi et al., 1999) or to explore the role of trust in organizational settings (e.g. Carter & Weber, 2010; Huang, & Murnighan, 2010; Michaelis, Woisetschläger, Backhaus, & Ahlert, 2008). Although the GTS has been widely used in several psychology research fields, there is not much data gathered on trust's individual differences. There are a few papers that report about gender and age effects, as well as the relationship between trust and other personality variables. All authors report no gender or age differences on trust when this scale is utilized (Boone, Declerck, & Kiyonari, 2010; Hiraishi, Yamagata, Shikishima, & Ando, 2008; Igarashi et al., 2008). Furthermore, Hiraishi et al. (2008) explored the relationship between the GTS and the Big Five factors and found that, indeed, they were all related, being extraversion (r = .36) and agreeableness (r = .30) the most strongly related ones and both predicting general trust.

The aim of this study is to adapt Yamagishi General Trust Scale to Spanish in order to achieve a measure of propensity to trust that may enable us to conduct applied and theoretical research on trust in Spanish. Certainly, trust has a great interest because of its influence on interpersonal interactions, especially in organizational and economical settings (Evans & Revelle, 2008). Therefore, it is important to study its dispositional dimension in order to achieve a measure that allows us to predict social behavior and to contribute to the theoretical model of trust. It would be an important advance to have an instrument with established reliability and validity in order to homogenize trust research in Spanish and be able to compare the results cross-culturally, contributing to international trust literature.

Method

Participants and Procedure

The sample comprises 626 non-student participants (335 females, 53.3 %), whose age ranged from 18 to 65 years (Mean = 38.84, *SD* = 13.18). All data was collected online and participants were contacted through university students. Yamagishi General Trust Scale was translated from English to Spanish by a bilingual expert. The rest of instruments already had a Spanish version.

Measures

Spanish adaptation of Yamagishi General Trust Scale (Yamagishi & Yamagishi, 1994). In this study we took into account the International Test Commission Guidelines for Translating and Adapting Tests (International Test Commission, 2010; Hambleton, 1994; Muñiz & Hambleton, 1996). Originally, the scale had six items, but the last of them was deleted (T. Yamagishi, personal communication, December 9, 2009) and it has not been used for this study. Currently, the Spanish version of the GTS has five items with a five-point Likert scale, being 1 completely disagree and 5 completely agree. The scale contains items such as "Most people are basically honest". All internal consistency values are reported in the results section.

Zuckerman Sensation Seeking Scale (SSS; Zuckerman, 1979). The Spanish version of the SSS (Pérez & Torrubia, 1986) was used in this study, specifically, the total Sensation Seeking score. The scale comprises 40 dichotomous response items, where participants have to answer questions about their past and future risk behavior. The scale yielded a reliability of .81.

The Spanish version of the NEO-FFI (Costa & McCrae, 1999) was employed to assess the Big Five personality dimensions. This questionnaire was developed by Costa and McCrae (1992) and contains 60 items measuring the five personality factors: Neuroticism, Extroversion, Openness to experience, Agreeableness and Conscientiousness. In this study, the internal consistency of the scales ranged from .73 to .85.

Online Purchase Intention. A six items questionnaire with a five-point Likert scale was used in order to assess the participants' online purchase intention. It is based on Klopping & McKinney (2004) and Vijayasarathy (2004) inventories. An example of an item would be "I am going to use the Internet as an alternative shopping channel". The internal consistency of this instrument was .89.

Computerized Investment Task. This task is an adaptation of the traditional Investment Game (Berg, Dickhaut, & McCabe, 1995), which is considered to be the standard dilemma of trust (Evans & Revelle, 2008). In this adapted version, the

individual participates along with a group of four virtual subjects. The individual and the virtual subjects own two different funds: a particular and a communal one. The particular fund depends only on the amount of tokens that the individual invests in it and has a fixed interest rate (1.90). In contrast, the communal fund has an interest rate that varies depending on the amount of tokens that the entire group invests in it (fixed .10 plus .18 for every 50 tokens invested in this fund). The more tokens invested in it, the higher its interest rate. The task consists of distributing one's initial tokens between the individual and the communal fund in order to achieve the maximum benefit for oneself. In the present study, there were five trials. Each trial comprised four rounds. At the beginning of every trial, the particular and the communal funds' interest rate were the same because each subject had one hundred tokens invested in each of them. In order to calculate the task's internal consistency, each trial is considered as an item (α = .82).

Results

Descriptive statistics and age and gender differences

Table 1 provides descriptive statistics of the General Trust Scale score for age and gender groups. A univariate analysis of variance was conducted in order to explore gender and age differences. To this end, the sample was divided into four groups of age. The analysis yielded a significant effect of age on the trust score (F (3, 618) = 13.87, $p \leq .000$, η^2 = .063). Post-hoc Bonferroni test results showed that general trust score increases with age. The gender effect and the interaction effect were both non-significant (F (1, 618) =.166, p = .683, η^2 = .000; F (3, 618) = 1.58, p =.193, η^2 = .008, respectively).

Table 1. Descriptive statistics of the General Trust Scale' score for age and gender groups.

	General trust scale' score								
	Total			Female			Male		
Age	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*	*N*	*Mean*	*SD*
18-28	200	13.86	3.72	97	14.44	3.69	103	13.32	3.69
29-40	97	14.88	3.24	55	14.74	3.52	42	15.07	2.87
41-49	169	15.14	3.67	106	15.17	3.81	63	15.07	3.45
50-65	160	16.38	3.80	77	16.18	4.21	83	16.57	3.40
Total	626	15.01	3.77	335	15.12	3.86	291	14.88	3.67

General Trust Scale (GTS) analysis: reliability and factor structure

The internal consistency analysis showed a Cronbach's alpha of .862 and an average inter-item correlation of .551. To determine the unidimensional latent structure an Exploratory Factor Analysis (*EFA*), based upon parallel analysis as a factor retention criterion, was employed. Table 2 reports the factor loadings of the 5 items. Parallel analysis results indicate that only the first eigenvalue from the actual data is larger than the corresponding first 95th percentile (and mean) random data eigenvalue (see Table 3). These results indicate that only one component should be retained.

Table 2. Factor loadings of GTS items (N = 626).

GTS item	Factor loadings
1	0.811
2	0.862
3	0.830
4	0.580
5	0.650

Table 3. Parallel analysis report (N = 626).

Eigenvalue	Raw data	Random data	
		Mean	Percentile 95
1	3.22	1.11	1.16
2	0.68	1.05	1.08
3	0.50	0.99	1.02
4	0.31	0.95	0.98
5	0.26	0.89	0.93

GTS items analysis: information and bias

Item Response Theory (IRT) analyses were conducted in order to estimate item parameters and to identify Differential Item Functioning (DIF). The items were calibrated with a graded response model using *MML* estimation in MULTILOG 7. Table 4 shows the estimated item parameters. Inspection of the *a*-parameters showed high discrimination values for all items (Baker, 2001). Threshold parameters (b_i) were distributed evenly across the trait range (CRC for all items in Fig. 1). The items' fit index G^2 was calculated using *IRTLR-DIF* to detect potential differential item functioning across groups defined by gender and age. No significant DIF were shown for all items as a function of gender. Among the four age range groups, two items had a significant G^2 value. Item 2 showed a significant G^2 between groups 1 and 3 (G^2 = 18.9, p = .002) and between groups 1 and 4 (G^2 = 16.2, p = .006). Item 4 showed differential item functioning by age between groups 3 and 4 (G^2 = 21.7, $p \leq$ .000). All DIF involved only discrimination (*a*) parameters.

Table 4. Graded response parameters.

Item	*a*	*SE*	b_1	*SE*	b_2	*SE*	b_3	*SE*	b_4	*SE*
1	2.98	0.18	-1.55	0.09	-0.54	0.06	0.53	0.06	2.17	0.14
2	3.79	0.25	-1.66	0.09	-0.64	0.05	0.30	0.05	1.94	0.10
3	3.31	0.20	-1.77	0.11	-0.51	0.05	0.55	0.06	2.93	0.16
4	1.58	0.11	-2.18	0.18	-0.29	0.08	1.07	0.11	3.50	0.39
5	1.90	0.13	-2.54	0.21	-1.10	0.09	1.22	0.07	2.35	0.19

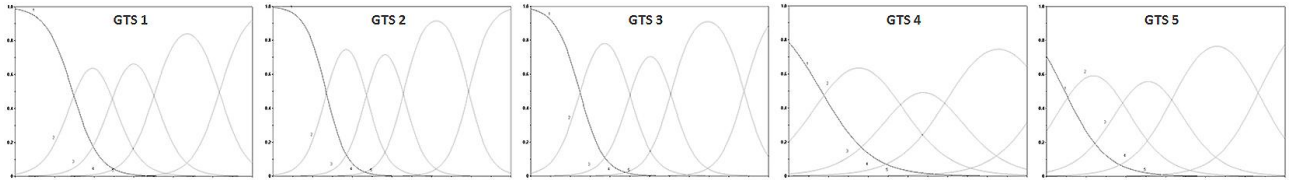

Figure 1. Category response curves for all 5 items of the GTS.

Relationship between general trust and the personality variables

Correlation and multiple linear regression analyses were made to ascertain if there is a relationship between the general trust score and measures of the Big Five personality factors. Positive correlations were found between general trust and agreeableness for the whole sample (r = .376, $p \leq$.000), while the trust score also correlated with openness to experience in the female group (r =.135, p = .027). Agreeableness accounted for 18% of the general trust score variance for females (R^2 = .178, F (1,253) = 56.02, $p \leq$ .000) and 10% for males (R^2 = .110, F (1,216) = 27.78, $p \leq$. 000). Furthermore, openness to experience was positively and weakly associated with general trust in females (ΔR^2 = .013, F (1,252) = 3.92, p = .049) whereas extraversion contributed negatively in males (ΔR^2 =. 035, F (1,215) = 8.86, p = .003).

Relations of the general trust to trust related behaviors

The results indicate that there is not a relationship between general trust and the criterion measures (see Fig. 2). Both the investment game score and online purchase intention correlated positively with openness to experience. The latter is also related to sensation seeking. None of the former variables, except the GTS score, showed a significant relationship with agreeableness either.

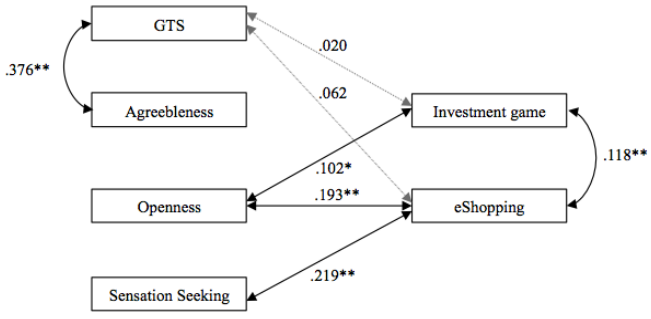

Figure 2. Correlations among the GTS and other personality and behavioral variables.

Discussion

Due to the importance that trust has on social interactions it has been a primary aim of psychology to study this phenomenon at an applied and a theoretical level. The most cited model of trust is the one developed by Mayer et al. (1995). Although some authors have attained some results that support this model (e.g. Colquitt et al., 2007), research on this topic is still needed in order to achieve a comprehensive understanding of trust. On the other hand, there is a great amount of papers that deal with the relevance that trust may have on certain behaviors that occur within organizational and social settings. However, when this research is done in Spanish, authors rely on single item measures or a compound of items taken from different inventories. Therefore, in order to conduct trust research in Spanish, with the aim of contributing to its theoretical background as well as to its applied dimension, it is necessary to provide a reliable and validated instrument that enables us to achieve this objective.

The aim of this study was to present a Spanish adaptation of the General Trust Scale (GTS), developed by Yamagishi and Yamagishi (1994), and to achieve some preliminary results about its reliability and validity. The results reveal adequate psychometric properties of the instrument. The internal consistency was high and above the Cronbach's α reported by other authors (e.g. Gollowitzer et al., 2009; Lockhorst et al., 2009; Yamagishi & Yamagishi, 1994). IRT analysis showed that all items displayed high discrimination parameters, indicating their capacity to show increasing response options as a function of increasing levels of trust. Furthermore, the category thresholds are well spread across the trust range, denoting an ability to discern between trust levels.

Differences due to gender and age were examined through univariate analysis of variance, in order to explore individual differences in trust, and through DIF analysis, to study if individuals answered dissimilarly to the scale depending on the group they belonged to. With respect to the potential gender effects, no differences aroused in mean trust and there were no bias due to the respondent's gender. These results are in the same lines as those reported by other authors, who did not find gender differences on trust (e.g. Boone et al., 2010; Hiraishi et al., 2008; Igarashi et al., 2008). However, the analysis of age differences yielded contrasting results. There was a significant upward trend of trust with age, but the analysis revealed nonuniform DIF for two of the items. Because of this result, the differences on trust between age range groups should be considered with caution.

Correlation analyses between trust and the Big Five personality factors revealed the expected results when the whole sample was taken into account: propensity to trust is related to agreeableness, as it has been previously reported

by Hiraishi et al. (2008). Nevertheless, when these correlations were carried out separately for males and females, two different patterns of relationships emerged. While for both groups agreeableness is the most explanatory personality trait, it seems that trust is related to openness to experience for women and to extraversion for men. More research would be needed in order to fully understand this different pattern of relationships.

The predictive validity of the scale seems not to be supported by these data, as there was no significant correlation between propensity to trust and the two behavioral variables: investment behavior and online-purchase intention. However, these results should be interpreted taking into account some issues. First, according to Mayer's et al. (1995) model, the relationship between propensity to trust and trust related behaviors is mediated by trust -the willingness to become vulnerable-. Furthermore, research on trust within the domain of ICT also proposes that propensity to trust's influence on trust related behaviors is mediated by other variables (e.g. Gefen, 2000; Salo & Karjaluoto, 2007). However, we should keep in mind that Yamagishi GTS has been validated across several domains as a good predictor of certain behaviors (Yamagishi et al., 1999). Thus, more research seems to be needed in order to achieve a comprehensive understanding of trust at a theoretical level -by means of studies that focus on the confirmation of a general model- but also at an applied level -by investigating which behaviors may and may not be predicted by propensity to trust-. Secondly, one of the reasons that could explain the lack of relationship between Yamagishi General Trust Scale and measures of risk -i.e. Zuckerman SSS, investment behavior and online purchase intention- is that the GTS measures the general expectation that others will behave benevolently, but it lacks items that assess the willingness to accept vulnerability and so the risk propensity dimension of trust (Evans & Revelle, 2008). Both issues could be addressing the fact that this instrument may be more useful to predict social behavior rather than risk taking behaviors.

In conclusion, these results indicate that the Spanish adaptation of Yamagishi General Trust Scale has satisfactory psychometric properties and its use for trust research is encouraged. Nevertheless, more research is needed with the aim of refining its relationship with other personality variables and behavioral measures.

Yamagishi general trust scale

1. La mayoría de las personas son honestas.
2. La mayoría de la gente merece nuestra confianza.
3. La mayoría de las personas son buenas y amables.
4. La mayoría de las personas confían en los demás.
5. Generalmente, confío en los demás.

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